

U.S. Patent Application Serial No. 10/053,712
Amendment dated September 16, 2003
Reply to Office Action of June 17, 2003

REMARKS

Applicant has amended the claims to clarify the present invention. The drawings have been amended as requested.

Applicant notes the allowability of Claims 5, 6 and 16-20 which have been amended so as to be in condition for allowance. Allowance thereof is respectfully requested.

Applicant's claims 1, 2 and 7-15 have been rejected under 35 U.S.C. §102(e) as being anticipated by Sakamoto (U.S. 6,387,758), while Claims 3 and 4 have been rejected as obvious in view of a combination of Sakamoto and Saito et al. (U.S. 6,537,369). Reconsideration and removal of these rejections are respectfully requested in view of the present amendments to the claims and the following remarks.

With respect to Claims 1, 2, and 7-15, the Office Action states that Sakamoto discloses a base layer 1910 formed on the first semiconductor layer 210, connected to the outgoing base electrode 1810 at a side surface of the outgoing base electrode 1810 (see FIG. 25).

However, the sidewall portion 1810 of Sakamoto does not correspond to an outgoing base electrode 26 of the present invention (see FIG. 1 of the present application). The sidewall portion 1810 is not an outgoing base electrode. A portion 910 of Sakamoto corresponds to the outgoing base electrode 26 of the present invention.

In the present claimed semiconductor device and method, the base layer is connected to the outgoing base electrode directly. Independent claims 1, 2, 13 and 15 have been amended to distinctly claim this feature.

Again, in Sakamoto, the base layer 1910 is connected to the outgoing base electrode 910 through the sidewall portion 1810, as a distinct arrangement.

In the present claimed invention, since the base layer is connected to the outgoing base electrode directly, it is unnecessary to form a sidewall portion at a side surface of the outgoing base electrode. Therefore, in the present claimed invention, it is possible to simplify the forming steps of the semiconductor device.

On the other hand, in Sakamoto, the forming steps of the semiconductor devices are very complicated.

Furthermore, in the present claimed invention, since the sidewall portions are not formed on both side of the base layer, it is possible to decrease a parasitic capacitance between the base and the first semiconductor layer. Therefore, in the present invention, it is possible to improve the speed of operation.

On the other hand, in Sakamoto, since the sidewall portions are formed on both sides of the base layer, a large parasitic capacitance between the base and an n-type epitaxial layer 210 exists. Therefore, in Sakamoto, it is difficult to improve the speed of operation.

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With regard to the obviousness rejection of Claims 3 and 4, the Office Action admits that Sakamoto fails to teach the exact amount of carbon in the base layer.

The Office Action then states that Saito et al. discloses a semiconductor device layer of SiGe containing carbon, where the layer contains carbon by 0.01% to 60.

However, Saito et al., as well as Sakamoto, as above described, does not disclose nor suggest a base layer connected to the outgoing base electrode directly as now called for in Applicant's amended claims.

In view of the above remarks and the present amendments to Claims 1-4 and 7-15, as well as Claims 5, 6 and 16-20, are believed to be patentable and in condition for allowance. Early action towards allowance thereof is respectfully requested.


If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN & HATTORI, LLP



William G. Kratz, Jr.
Attorney for Applicants
Reg. No. 22,631

WGK/nrp

Atty. Docket No. 020076
Suite 1000, 1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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PATENT TRADEMARK OFFICE

Enclosures: Replacement Sheets of Drawing (Figs. 10-11C)

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